TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2018-** **Date: 31-05-21**
Project Name	:	Improvements to Roads and Drains at Jakkur and Srirampura Surrounding Area in Ward No.05 (Jakkur)
Agency	:	Sri. Gnanendra Murthy M D, #410, Balaji Nilaya, 5th Main Road, 4th Cross, Near Priya Darshini School, Kengeri Satellite Town, Bangalore-60.
Customer Reference	:	EE(Project)/Ynk Zone/ WO/161/2020-21
Date of Receipt	:	28-05-21
Type of Mix	:	DBM (Dense Bituminous Mecadam)
Date of test	:	28-05-21

The results of the tests conducted on the Dense Bituminous Macadam mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.29	11.82	9KN(Min)
2	Marshal flow at 60°C, mm	3.54	3.87	2-4
3	Percent air Voids	4.56	4.17	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.54	14.76	13-15
5	Percent Voids filled with Bitumen(VFB %)	68.98	70.28	65-75
6	Density, g/cc	2.42	2.40	–

* The results obtained are satisfactory as per standard requirements.

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End of Report

TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : **CP-RW-2018-** **Date: 31-05-21**

Project Name : Improvements to Roads and Drains at Jakkur and Srirampura Surrounding Area in Ward No.05 (Jakkur)

Agency : Sri. Gnanendra Murthy M D, #410, Balaji Nilaya, 5th Main Road, 4th Cross, Near Priya Darshini School, Kengeri Satellite Town, Bangalore-60.

Customer Reference : EE(Project)/Ynk Zone/ WO/161/2020-21

Date of Receipt : 28-05-21

Type of Mix : DBM(Dense Bitumnous Macadam)

Date of test : 28-05-21

Type of Binder : 60/70

% of Binder Used : 5.0%

Weight of Aggregate : 200.0 gm

Weight of Binder : 10.0 gm

Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

* The results obtained are satisfactory as per standard requirements.

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR DBM (IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	**CP-RW-2021-06-15-16**	**Date: 10-06-21**
Project Name	:	Improvements to Roads and Drains at Jakkur and Srirampura Surrounding Area in Ward No.05 (Jakkur)	
Agency	:	Sri. Gnanendra Murthy M D, #410, Balaji Nilaya, 5th Main Road, 4th Cross, Near Priya Darshini School, Kengeri Satellite Town, Bangalore-60.	
Customer Reference	:	EE(Project)/Ynk Zone/ WO/161/2020-21	
Date of Receipt	:	09-06-21	
Type of Mix	:	DBM (Dense Bituminous Macadam), 13th Cross Road	
Date of test	:	09-06-21	

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	475	476
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.8	4.8
4	Average percentage	%	4.8	

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BBMP, Bangalore - 92

Lab ID : **CP-RW-2021-06-15-16** **Date: 10-06-21**

AFTER EXTRACTION(Trail-1)

Weight of Sample(gm) : 475

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight *Retained (gm)*	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification *Table 500-10(grading -2)*
37.5	0	0	0	100.0	100
26.5	14.4	14.4	3.03	97.0	90-100
19	24	38.4	8.08	91.9	71-95
13.2	120	158.4	33.35	66.7	56-80
4.75	96	254.4	53.56	46.4	38-54
2.36	80	334.4	70.40	29.6	28-42
0.3	62.4	396.8	83.54	16.5	7-21
0.075	52.8	449.6	94.65	5.3	2-8

AFTER EXTRACTION(Trail-2)

Weight of Sample(gm) : 476

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0	100.0	100
26.5	14.8	14.8	3.11	96.9	90-100
19	24	38.8	8.15	91.8	71-95
13.2	120	158.8	33.36	66.6	56-80
4.75	96	254.8	53.53	46.5	38-54
2.36	78	332.8	69.92	30.1	28-42
0.3	62.4	395.2	83.03	17.0	7-21
0.075	52.8	448	94.12	5.9	2-8

* The results obtained are satisfactory as per standard requirements.

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End of Report

TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Date: 07-06-21

Lab ID	:	**CP-RW-**
Project Name	:	Improvements to Roads and Drains at Jakkur and Srirampura Surrounding Area in Ward No.05 (Jakkur)
Agency	:	Sri. Gnanendra Murthy M D, #410, Balaji Nilaya, 5th Main Road, 4th Cross, Near Priya Darshini School, Kengeri Satellite Town, Bangalore-60.
Customer Reference	:	EE(Project)/Ynk Zone/ WO/161/2020-21
Date of Receipt	:	03-06-21
Type of Mix	:	BC-Plant (Bituminous Concrete)
Date of test	:	03-06-21
Oven Dry Weight	:	5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	89	89	1.8	98.2	90-100
9.5	702	791	15.8	84.2	70-88
4.75	895	1686	33.7	66.3	53-71
2.36	587	2273	45.5	54.5	42-58
1.18	492	2765	55.3	44.7	34-48
0.6	503	3268	65.4	34.6	26-38
0.3	528	3796	75.9	24.1	18-28
0.15	458	4254	85.1	14.9	12-20
0.075	350	4604	92.1	7.9	4-10
PAN	396	5000	100	0.0	0

* The results obtained are satisfactory as per standard requirements.

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End of Report

TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : **CP-RW-** **Date: 07-06-21**

Project Name : Improvements to Roads and Drains at Jakkur and Srirampura Surrounding Area in Ward No.05 (Jakkur)

Agency : Sri. Gnanendra Murthy M D, #410, Balaji Nilaya, 5th Main Road, 4th Cross, Near Priya Darshini School, Kengeri Satellite Town, Bangalore-60.

Customer Reference : EE(Project)/Ynk Zone/ WO/161/2020-21

Date of Receipt : 03-06-21

Type of Mix : BC(Bitumenous Concrete)

Date of test : 03-06-21

Type of Binder : 60/70

% of Binder Used : 5.0%

Weight of Aggregate : 200.0 gm

Weight of Binder : 10.0 gm

Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.5	1.5	98.3	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

* The results obtained are satisfactory as per standard requirements.

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****End of Report****

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | ENVIRONMENTAL
WATER TESTING | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES

PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID : **CP-RW-** **Date: 07-06-21**

Project Name : Improvements to Roads and Drains at Jakkur and Srirampura Surrounding Area in Ward No.05 (Jakkur)

Agency : Sri. Gnanendra Murthy M D, #410, Balaji Nilaya, 5th Main Road, 4th Cross, Near Priya Darshini School, Kengeri Satellite Town, Bangalore-60.

Customer Reference : EE(Project)/Ynk Zone/ WO/161/2020-21

Date of Receipt : 03-06-21

Type of Mix : BC (Bituminous Concrete)

Date of test : 03-06-21

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.4	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	11.8		
Strength	Aggregate Impact Value	22.1	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.68	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.21	Maximum 2%	IS:2386 Part III

The results obtained are satisfactory as per standard requirements.

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TESTS RESULTS ON STABILITY OF MIX

Lab ID : **CP-RW-** **Date: 07-06-21**

Project Name : Improvements to Roads and Drains at Jakkur and Srirampura Surrounding Area in Ward No.05 (Jakkur)

Agency : Sri. Gnanendra Murthy M D, #410, Balaji Nilaya, 5th Main Road, 4th Cross, Near Priya Darshini School, Kengeri Satellite Town, Bangalore-60.

Customer Reference : EE(Project)/Ynk Zone/ WO/161/2020-21

Date of Receipt : 03-06-21

Type of Mix : BC (Bituminous Concrete)

Date of test : 03-06-21

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.14	11.13	10KN(min)
2	Marshal flow at 60°C, mm	3.52	3.51	2-4
3	Percent air Voids	4.82	4.83	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.28	14.26	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.87	71.63	65-75
6	Density, g/cc	2.25	2.26	–

* The results obtained are satisfactory as per standard requirements.

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End of Report

TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID : **CP-RW-2021-06-15-16** **Date: 11-06-21**

Project Name : Improvements to Roads and Drains at Jakkur and Srirampura Surrounding Area in Ward No.05 (Jakkur)

Agency : Sri. Gnanendra Murthy M D, #410, Balaji Nilaya, 5th Main Road, 4th Cross, Near Priya Darshini School, Kengeri Satellite Town, Bangalore-60.

Customer Reference : EE(Project)/Ynk Zone/ WO/161/2020-21

Date of Receipt : 10-06-21

Type of Mix : BC (Bituminous Concrete), 15th Cross Road

Date of test : 10-06-21

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	470	471
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	6.00	5.80
4	Average percentage	%	5.9	

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Lab ID : **CP-RW-2021-06-15-16** **Date: 11-06-21**

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.9	62.1	53-71
2.36	88	266	56.6	43.4	42-58
1.18	29	295	62.8	37.2	34-48
0.6	11	306	65.1	34.9	26-38
0.3	46	352	74.9	25.1	18-28
0.15	45	397	84.5	15.5	12-20
0.075	52	449	95.5	4.5	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 471

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.8	62.2	53-71
2.36	88	266	56.5	43.5	42-58
1.18	29	295	62.6	37.4	34-48
0.6	11	306	65.0	35.0	26-38
0.3	46	352	74.7	25.3	18-28
0.15	45	397	84.3	15.7	12-20
0.075	54	451	95.8	4.2	4-10

* The results obtained are satisfactory as per standard requirements.

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Format No: CP/TF/01

TEST REPORT ON BITUMEN

Lab ID : **CP-RW-2021-06-15-16** **Date: 27-05-21**

Project Name : Improvements to Roads and Drains at Jakkur and Srirampura Surrounding Area in Ward No.05 (Jakkur)

Agency : Sri. Gnanendra Murthy M D, #410, Balaji Nilaya, 5th Main Road, 4th Cross, Near Priya Darshini School, Kengeri Satellite Town, Bangalore-60.

Customer's Reference : EE(Project)/Ynk Zone/ WO/161/2020-21

Date of Receipt : 25-05-21

Sample Type : Bitumen

Reference to BIS codes : IS: 1201-1220(1978) (Reaffirmed-2004)

Date of test : 25-05-21

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**64**	60 to 70
2	Softening Point, °C	**51.2**	Min. 40°C
3	Ductility, cm	**98**	Min. 75cm
4	Flash point, °C	**245**	Min. 220°C
	Fire point, °C	**272**	

* The results obtained are satisfactory as per standard requirements.

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****End of Report****

DETERMINATION OF RATE OF SPREAD TACK COAT

Lab ID : **CP-RW-2021-06-15-16** **Date: 11-06-21**

Project Name : Improvements to Roads and Drains at Jakkur and Srirampura Surrounding Area in Ward No.05 (Jakkur)

Agency : Sri. Gnanendra Murthy M D, #410, Balaji Nilaya, 5th Main Road, 4th Cross, Near Priya Darshini School, Kengeri Satellite Town, Bangalore-60.

Customer Reference : EE(Project)/Ynk Zone/ WO/161/2020-21

Date of Receipt : 10-06-21

Type of Mix : Tack coat

Date of test : 10-06-21

Sl.No	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
2	Area of Plate (a)	Sq.mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.78	0.748
4	Final weight of plate after application of tack Coat (c)	Kg	0.803	0.771
5	Weight of tack Coat (d=c-b)	Kg	0.023	0.023
6	Rate of spread of tack coat	Kg/sq.m	0.256	0.256
7	Average	Kg/sq.m	0.256	
8	Specified Limit	Kg/sq.m	0.250 Kg/sq.m	

* The results obtained are satisfactory as per standard requirements.

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